

CLAIMS

1-12. (Cancelled)

13. (Original) A switched filter bank comprising:

a first substrate of high dielectric constant ceramic;

a first ground plate disposed on a bottom surface of said first substrate;

a second substrate of high dielectric constant ceramic attached to a top surface of said first substrate and adapted to cover a portion of said first substrate, wherein the portion covered by said second substrate forms a stripline region and the portion or portions not covered by said second substrate form a microstrip region;

a second ground plate disposed on a top surface of said second substrate;

a predetermined number of transmission line filters disposed between said first and second substrates;

an input port;

an output port;

a first circuit adapted to receive a control signal and in accordance therewith couple said input port with one of said filters; and

a second circuit adapted to receive a control signal and in accordance therewith couple said filter selected by said first circuit to said output port.

14. (Original) The invention of Claim 13 wherein said first circuit is implemented as a single integrated circuit.

15. (Original) The invention of Claim 14 wherein said first circuit is attached to said first substrate in said microstrip region.

16. (Original) The invention of Claim 13 wherein said second circuit is implemented as a single integrated circuit.

17. (Original) The invention of Claim 16 wherein said second circuit is attached to said first substrate in said microstrip region.

18. (Original) The invention of Claim 13 wherein said first circuit is implemented using microelectromechanical components.

19. (Original) The invention of Claim 13 wherein said second circuit is implemented using microelectromechanical components.

20. (Original) The invention of Claim 13 wherein said first circuit is a first single pole multiple throw switch.

21. (Original) The invention of Claim 20 wherein said switched filter bank further includes a plurality of transmission lines disposed on the top surface of said first substrate, each transmission line adapted to couple one of the outputs of said first switch with one of said filters.

22. (Original) The invention of Claim 13 wherein said second circuit is a second single pole multiple throw switch.

23. (Original) The invention of Claim 22 wherein said switched filter bank further includes a plurality of transmission lines disposed on the top surface of said first substrate, each transmission line adapted to couple the output of one of said filters to one of the inputs of said second switch.

24. (Original) The invention of Claim 13 wherein said switched filter bank further includes a plurality of ground paths disposed on the top surface of said first substrate and including a plurality of vias connected to said first ground plate.

25. (Original) The invention of Claim 24 wherein said ground paths are adapted to isolate said filters and transmission lines.

26. (Original) The invention of Claim 24 wherein said switched filter bank further includes one or more openings cut into said second substrate and second ground plate, wherein each opening follows and is aligned over a portion of a ground path and is filled in with conducting material, such that said second ground plate is connected to said first ground plate.

27. (Original) The invention of Claim 13 wherein said first substrate has a relative dielectric constant greater than or equal to 40.

28. (Original) The invention of Claim 13 wherein said second substrate has a relative dielectric constant greater than or equal to 40.

29. (Original) The invention of Claim 13 wherein at least one of said filters is an interdigital structure.

30. (Original) The invention of Claim 13 wherein at least one of said filters is a zig-zag edge coupled filter comprising a plurality of open-ended transmission line resonators, wherein half of a resonator line is coupled to an adjacent line on one side and the other half of the resonator line coupled to an adjacent line on the other side, and each resonator is bent at a predetermined angle.

31. (Original) The invention of Claim 30 wherein said predetermined angle is 90 degrees.

32. (Original) An edge coupled filter comprising:

a dielectric substrate and

a plurality of open-ended transmission line resonators disposed on a top surface of said substrate, wherein half of a resonator line is coupled to an adjacent line on one side and the other half of the resonator line coupled to an adjacent line on the other side, and each resonator is bent at a predetermined angle.

33. (Original) The invention of Claim 32 wherein said predetermined angle is 90 degrees.

34. (Original) A switch comprising:
a substrate;
an input transmission line disposed on a top surface of said substrate;
a predetermined number of output transmission lines disposed on the top surface of said substrate,
wherein said predetermined number is greater than two; and
a predetermined number of microelectromechanical switching units disposed on said substrate,
each switching unit adapted to receive a control signal and in accordance therewith couple said input
transmission line to one of said output transmission lines.

35. (Original) The invention of Claim 34 wherein said switch is configured as a single pole multiple
throw switch.

36. (Original) The invention of Claim 34 wherein said predetermined number is four.

37. (Original) The invention of Claim 36 wherein said input transmission line is coupled to a first port
of a four port junction.

38. (Original) The invention of Claim 37 wherein second and third opposing ports of said four port
junction are coupled to the inputs of a first switching unit and a second switching unit, respectively.

39. (Original) The invention of Claim 38 wherein a fourth port of said four port junction, opposite said
first port, is coupled to a first port of a three port junction by a transmission line.

40. (Original) The invention of Claim 39 wherein second and third opposing ports of said three port
junction are coupled to the inputs of a third switching unit and a fourth switching unit, respectively. 41. The
invention of Claim 40 wherein each switching unit includes a switch input line and a switch output line disposed
on said substrate, and an armature attached to said substrate at one end and a switch transmission line
disposed on a second end, wherein said second end is positioned above said switch input and switch output

when said switching unit is open, and said second end is lowered such that said switch transmission line couples said switch input to said switch output when said switching unit is closed.

42. (Original) The invention of Claim 41 wherein each switching unit further includes a substrate electrode disposed on said substrate under said armature, and an armature electrode disposed on said armature above said first electrode.

43. (Original) The invention of Claim 42 wherein said first and second electrodes are adapted to receive a bias voltage and in accordance therewith open or close said switching unit.

44. (Original) The invention of Claim 43 wherein said switch further includes a plurality of bias pads for supplying said bias voltages to said switching units.

45. (Original) The invention of Claim 44 wherein a single bias pad is connected to an electrode of said third switching unit and an electrode of said fourth switching unit.

46. (Original) The invention of Claim 45 wherein a single bias pad is connected to the substrate electrodes of said third and fourth switching units.

47. (Original) The invention of Claim 45 wherein a single bias pad is connected to the armature electrodes of said third and fourth switching units.

48. (Original) The invention of Claim 34 wherein said switch has an isolation of greater than about 25 dB over the frequency range of about 0 to 20 GHz.

49. (Original) The invention of Claim 34 wherein said switch has an insertion loss of less than about 0.6 dB over the frequency range of about 0 to 20 GHz.